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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/748,594	12/30/2003	Robert McCabe	FCHM 0154 PUSA	8676
28395 7590 01/16/2007 BROOKS KUSHMAN P.C./FGTL 1000 TOWN CENTER 22ND FLOOR SOUTHFIELD, MI 48075-1238			EXAMINER HAILEY, PATRICIA L	
			ART UNIT 1755	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		01/16/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/748,594	<b>Applicant(s)</b> MCCABE ET AL.	
	<b>Examiner</b> Patricia L. Hailey	<b>Art Unit</b> 1755	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10-22 is/are allowed.
- 6) ☒ Claim(s) 1 and 3-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>10/02/06</u> . | 6) <input type="checkbox"/> Other: _____  |

Applicants' remarks and amendments, filed on October 30, 2006, have been carefully considered. Claim 2 has been canceled; no new claims have been added.

Claims 1 and 3-22 remain pending in this application.

### ***Withdrawn Rejections***

The 102(b) rejection of claims 1 and 4-9 as being anticipated by European Patent No. 815,925 A1, stated in the previous Office Action, has been withdrawn in view of Applicants' amendments and persuasive arguments traversing this rejection.

The 102(b) rejection of claims 10-12 and 14-22 as being anticipated by European Patent No. 888,816) stated in the previous Office Action has been withdrawn in view of Applicants' amendments and persuasive arguments traversing this rejection.

### ***Allowable Subject Matter***

1. The indicated allowability of claim 2, stated in the previous Office Action, is withdrawn in view of the newly discovered reference(s) to Cohen et al. (U. S. Patent No. 5,202,101). Rejections based on the newly cited reference(s) follow.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

***Claim Rejections - 35 USC § 102***

**3. *Claims 1 and 4-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Cohen et al. (U. S. Patent No. 5,202,101).***

Cohen et al. teach a solid sulfur oxide acceptor/solid sorbent (that is regenerable, see col. 9, lines 11-43) comprising copper, copper oxide or a mixture thereof coated on and/or impregnated in porous alumina powder. See col. 7, lines 29-33 of Cohen et al.

Although alumina is a preferred support or carrier material, inorganic oxides such as silica, zirconia, magnesia, titania, or composites thereof may also serve as carrier. See col. 7, lines 51-60 of Cohen et al. (considered to read upon **claims 4-7**).

The amount of sorbent on the porous carrier material "is not critical as long as there is a sufficient amount of sorbent,...to remove the oxides of sulfur from the gas stream..."; an exemplary percentage range is from about 0.1 to about 15% by weight based on the finished sorbent (at most 19.4 mol percent). See col. 8, lines 49-64 of Cohen et al.

The sorbent comprising copper and/or copper oxide preferably supported on porous alumina as a carrier are suitable for the removal of sulfur oxides from gases under oxidative conditions at temperatures above 500°F (260°C), conditions which are normally found in exhaust gases. See col. 9, lines 52-59 of Cohen et al. (considered to read upon claims 8 and 9).

In view of these teachings, Cohen et al. anticipate claims 1 and 4-9.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. ***Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cohen et al. (U. S. Patent No. 5,202,101).***

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Cohen et al. is relied upon for its teachings in the above 102(b) rejection.

Although this reference teaches a weight percentage of copper or copper oxide of about 0.1 to about 15 weight percent (corresponding to 19.4 mol percent), the reference does not specifically disclose claim 3's "Cu loading is about 25 mol %".

However, because Cohen et al. disclose that the amount of sorbent "is not critical as long as there is a sufficient amount of the sorbent....to remove the oxides of sulfur from the gas stream...". See col. 8, lines 49-56 of Cohen et al. From this teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to determine through routine experimentation the optimal amount of sorbent to remove sulfur oxides, such as Applicants' claimed 25 mol %, because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 U.S.P.Q. 215 (CCPA 1980).

#### ***Allowable Subject Matter***

8. Claims 10-22 are allowed.
9. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record does not teach or suggest zirconia-praseodymia or mixed manganese-yttria, as recited in independent claims 10 and 16.

***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

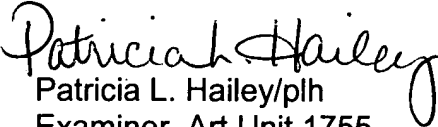
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patricia L. Hailey whose telephone number is (571) 272-1369. The examiner can normally be reached on Mondays-Fridays, from 7:00 a.m. to 3:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 1700 Receptionist, whose telephone number is (571) 272-1700.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Patricia L. Hailey/plh  
Examiner, Art Unit 1755  
January 8, 2007

  
J.A. LORENGO  
SUPERVISORY PATENT EXAMINER